From Chat bots to Virtual Tutors: An Overview of Chat GPT's Role in the Future of Education

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Abstract

Chat GPT is a highly advanced chat bot that stands out from other chat bots due to its remarkable ability to generate impressive prose in mere seconds. It has gained a lot of attention and sparked concerns about its potential impact on student assessments in higher education and various other fields. The goal of this study is to assess the potential benefits and drawbacks of using Chat GPT technology in educational settings, as well as any prospective impacts on student learning outcomes and educator pedagogy. The design of the study is a literature review. Our research has shown that there are both proponents and critics of using Chat GPT in education. Many proponents argue that Chat GPT has the potential to revolutionize the way we teach and learn. Its ability to generate human-like responses and adapt to the user's language and style of communication makes it an effective tool for personalized learning. On the other hand, there are also concerns about the use of Chat GPT in education. Critics contend that it might not be as successful at teaching critical thinking and problem-solving techniques and that it might result in a decline in human connection and individualized learning. According to our research, Chat GPT has certain drawbacks and difficulties even though it has the potential to be an effective teaching tool. Therefore, it is important that educators and policymakers carefully consider the potential advantages and disadvantages of using Chat GPT in their classrooms and develop appropriate strategies for responsible use.

Keywords: Artificial Intelligence (AI), Chat GPT, Education, Learning

INTRODUCTION

The subject of computer science known as artificial intelligence (AI) is growing quickly and focuses on creating intelligent systems that are capable of activities that would typically need human intellect, such as visual perception, speech recognition, decision-making, and language translation [1].

In order to create safe and practical AI for the benefit of humanity, Open AI was established in 2015 and focuses on advancing the field of AI through cutting-edge research, innovative technologies, and open collaboration. Open AI's research covers a wide range of AI-related fields, including machine learning, natural language processing, robotics, and more [2, 3].

GPT-3 (Generative Pre-trained Transformer 3) is a language model developed by Open AI, one of the world's leading AI research organizations, and designed to produce natural language texts that are virtually indistinguishable from human writing [4]. With over 175 billion parameters, it is the largest and most powerful language model [5].

GPT-3 can generate highly logical and contextually relevant text, making it useful for a wide range of applications, including chat bots, content generation, and language translation [6, 7].

In November 2022, Chat GPT, an advanced AI language model developed by Open AI, was released. This cutting-edge technology possesses the capability to generate responses that resemble human-like conversation, making it an invaluable resource for numerous applications, such as chat bot interactions and language translation. Chat GPT, a sophisticated architecture developed by Open AI, harnesses the power of deep neural networks to generate speech that is remarkably like that of a human. This remarkable capability signifies a substantial leap forward in the field of natural language processing, holding the promise to reshape our interactions with technology. By enabling interactions that are nearly indistinguishable from human conversation, Chat GPT has the potential to revolutionize the way we engage with and benefit from advanced AI systems [8].

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The versatility of Chat GPT's language tasks, such as inquiry answering, summarization, translation of languages, and chat bot interaction, is among its most remarkable features. Its advanced language understanding allows it to grasp complex language structures and understand context, enabling it to generate responses that are virtually indistinguishable from those of a human [9, 10].

In addition to its commercial applications, Chat GPT also has the potential to revolutionize the education sector. This may be accomplished by utilizing AI's capacity to comprehend and produce speech like that of a human to enhance a range of educational tasks, including content development, tailored learning, and student evaluations. Chat GPT can help educators develop more effective teaching strategies, provide personalized feedback to students, and create engaging and informative content [11].

Despite its many benefits, there are concerns about the potential risks associated with Chat GPT. One of the main challenges is that bias could be introduced into the model, as the data used could contain biases or stereotypes. In addition, misuse of AI technology is a concern, such as the creation of fake content or the spread of misinformation [12].

The common use of Chat GPT in academic work has brought up ethical dilemmas concerning AI authorship [13]. Evaluating academic tasks such as students' essays has also raised ethical debate [14]. Plagiarism of content is an inevitable concern that has been discussed, and suggestions have been made to modify essay settings and guidelines to address these issues [15].

This literature review aims to examine the advantages and disadvantages of integrating Chat GPT technology into educational settings and to analyze the impact of this integration on student engagement, teacher workload, and the quality of education provided. Furthermore, this literature review seeks to understand how the integration of Chat GPT technology affects the quality of education provided, such as its impact on learning outcomes, critical thinking skills, and the development of creativity. Finally, this literature review aims to provide recommendations for educators and policymakers on effectively integrating Chat GPT technology into educational settings to maximize its benefits while minimizing its drawbacks.

The research objectives of this study would also include identifying the key stakeholders involved in implementing Chat GPT in education, such as teachers, students, and educational institutions. Additionally, this study aims to identify the critical challenges associated with implementing Chat GPT in the classroom, such as technical barriers, ethical concerns, and the need for training and support.

MATERIALS AND METHODS

The process involved three main steps: first, defining the research question; second, identifying relevant references by using appropriate search methods and inclusion criteria; and third, organizing and summarizing the collected data before reporting the results.

Defining the Research Question

The objective of this study is to explore the potential benefits and drawbacks of integrating Chat GPT technology into educational settings and how this might impact student learning outcomes and teacher pedagogy. We addressed the following questions:

What are the advantages and disadvantages of integrating Chat GPT technology into educational settings, and how does this impact student engagement, teacher workload, and the quality of education provided?

Identifying Relevant References by Using Appropriate Search Methods and Inclusion Criteria

As Chat GPT is a new technology, there is currently a scarcity of peer-reviewed research on its application in education. The team responsible for the literature review carried out searches on electronic databases such as PubMed, Scopus, Web of Science (WoS), and Google Scholar. These searches were performed by a team of independent researchers to obtain articles and papers that were pertinent to the research question. In case of any further disagreements, they were resolved through discussions with a third researcher. The final manuscript was carefully reviewed and approved by all authors.

Based on the eligibility criteria, the search was limited to only cross-sectional epidemiological studies, systematic reviews, and meta-analyses published in English. During the research, Boolean operators such as "AND" were utilized to link specified MeSH terms in all search fields without any restrictions:

Keywords/query: "Chat GPT" and "education"
Time period: Publications from 2022 to 2023.

The articles that were not included in the study were those sourced from non-academic outlets, such as newspapers, internet websites, magazines, and the like. The outcomes of both searches were imported into EndNote v.20 for Windows (Thomson Research Soft, Stanford, CA, USA), resulting in a total of 21 records.

RESULTS AND DISCUSSION

We came across 21 academic papers about Chat GPT and its relationship to education, particularly in the areas of assessment, learning, and teaching, as of March 25th, 2023. Throughout our literature review, we have discovered a variety of viewpoints both in favor and against the use of Chat GPT in education.

Benefits of Using Chat GPT in Education

In this chapter, we will delve into the advantages of utilizing Chat GPT technology in education.

The possible advantages and disadvantages of utilizing Chat GPT in medical education are examined by Arif *et al*. The authors claim that Chat GPT has the power to completely change the landscape of medical education. Moreover, Chat GPT can aid educators in evaluating assignments and delivering tailored feedback to individual students. This potential for enhanced engagement and customized support holds the promise to reshape the methods and outcomes of medical education. Additionally, Chat GPT can enhance medical education by providing an interactive environment for practicing communication skills and providing access to vast knowledge [16].

In Lee's paper, the author investigates the potential for incorporating Open AI's Chat GPT, a cutting-edge language model, into medical education. Chat GPT's ability to generate responses resembling human conversation offers exciting possibilities for the development of interactive virtual learning environments tailored to medical students. This study looks at how Chat GPT may be used to improve learning by giving students a dynamic and interesting way to engage with virtual instructors and learn. The use of Chat GPT in medical education presents some difficulties and ethical issues that are covered in the study as well. Chat GPT has the ability to function as a virtual teaching assistant by providing students with immediate feedback and round-the-clock access to knowledge. This can unintentionally lighten the strain for instructors, giving them more time to concentrate on other curriculum components like real-world experience and practical skills. While the feature is not yet developed, Chat GPT may have the ability to adjust its teaching style and track students' progress based on the context of a conversation. Furthermore, medical students can improve their knowledge in real-time by utilizing Chat GPT in conjunction with a virtual histology slide application. Chat GPT can already create self-assessment tests with explanations for the answers [17].

"Chat GPT - Reshaping Medical Education and Clinical Management" by Khan *et al*. discusses the potential of Chat GPT in reshaping medical education and clinical management. The authors highlight that medical education and clinical management require vast knowledge, and Chat GPT can assist medical professionals and students access this knowledge. They mention that Chat GPT can aid in medical diagnosis, and patient monitoring and can assist healthcare professionals in making evidence-based decisions. The writers give instances of how Chat GPT might support medical students' learning. Medical students can utilize Chat GPT as a virtual teacher, which can help them learn and practice medical diagnoses and treatments [18].

According to Baidoo-Anu and Owusu Ansah, Chat GPT can completely change the way that education is imparted by giving students individualized coaching and feedback based on their unique learning requirements and progress. Additionally, it may be trained to grade student essays, giving professors more time to concentrate on other pedagogical areas [19].

Furthermore, Chat GPT can aid in the creation of adaptive learning platforms that modify their pedagogical strategies in response to each student's growth and performance, promoting individualized and successful learning strategies. By leveraging these features, Chat GPT has the potential to revolutionize the landscape of education and significantly enhance the learning journey for students worldwide [19].

A study by Baidoo-Anu and Owusu Ansah demonstrated that saving time for other crucial tasks, including spending more time with students, is another benefit of Chat GPT. It may act as a virtual tutor, responding to inquiries from pupils and offering clarifications on a variety of topics. For kids who are having difficulty with a specific subject or who require more support outside of the school setting, this can be very helpful. According to studies, individuals with language and learning difficulties and non-native speakers of their original tongues stand to gain greatly from using these natural language models [19].

Bašić *et al*. conducted a research study to assess the efficacy of utilizing Chat GPT-3 as a writing aid for students' essays. The students were divided into two groups, with one group receiving writing assistance from Chat GPT-3, while the other group wrote their essays without any assistance. The objective of the study was to evaluate the impact of Chat GPT-3's support on the student's writing process and outcomes. The authors suggested that Chat GPT-3 and similar generative AI tools could be helpful as writing assistants for students but should be used in conjunction with human feedback and guidance [20].

In their paper "Chat GPT for teaching, learning, and research: Prospects and challenges," The potential of Chat GPT to improve research, teaching, and learning is examined by Chinonso *et al*. They discuss the capabilities of Chat GPT and how it can assist in various tasks, including generating content, providing feedback, and improving language skills [21].

In their study, Gilson *et al*. delved into the examination of large language models, particularly Chat GPT, in relation to the United States Medical Licensing Examination (USMLE). By examining the capabilities and outcomes of Chat GPT within the realm of medical licensing examinations, the study sheds light on the opportunities and considerations associated with integrating advanced language models into the field of medical education. As demonstrated by the findings, Chat GPT's accuracy of 68.7% was on level with the average performance of humans, which is 70%. The authors talked about the possible advantages of big language models in medical education; such as providing personalized learning

experiences, reducing the burden on faculty to create and grade assessments, and allowing for the continuous evaluation of student knowledge [22].

Haensch *et al*. analyzed TikTok data to explore how students perceive and use Chat GPT, a large language model, in their studies. The authors collected and analyzed TikTok videos that mentioned Chat GPT or similar models, focusing on the content and sentiment of the videos as well as the user demographics. According to the authors, students valued Chat GPT's quickness and ease of use as well as the model's capacity to provide insightful and nuanced answers. The authors discussed these findings' implications for educators and developers of large language models. They noted that while students may find Chat GPT to be a useful tool, it is vital for educators to emphasize the importance of critical thinking and independent learning [23].

Karthikeyan analyzed the literature to determine the benefits and drawbacks of Chat GPT's potential effects on education. The review argues that Chat GPT can improve teacher preparation, increase access to education, and provide specific learning experiences, among other educational benefits. Furthermore, Critical thinking skills may be developed and complex concepts can be simpler to grasp with Chat GPT [24].

The advantages and disadvantages of utilizing big language models, such as Chat GPT, in the classroom are discussed by Kasneci *et al*. The first section of the article gives a summary of big language models' present status and uses in a variety of industries, including education. The authors then go into the possible advantages of implementing Chat GPT in the classroom, including its capacity to offer instant feedback, tailor lessons to each student, and its capacity to help students overcome language hurdles. The authors also highlight the potential of Chat GPT to address the shortage of teachers and provide access to education in remote or underserved areas. They argue that using Chat GPT in education requires careful consideration of ethical implications, including protecting students' data privacy [25].

In the paper "Initial Impressions of Chat GPT for anatomy education," author Mogali presents a case study examining the use of Chat GPT in anatomy education. Mogali employed Chat GPT as a virtual assistant to provide supplementary information to medical students in their anatomy course. The author also provided Chat GPT-generated self-check quizzes to help students assess their understanding of the subject matter. The study found that Chat GPT effectively provided students with instant access to information and answered their questions, thereby enhancing their learning experience. Additionally, the students were able to identify their knowledge gaps and areas for improvement through the self-check quizzes generated by Chat GPT [26].

With its sophisticated natural language processing capacities, Chat GPT offers a wide range of educational applications that are advantageous to educators and students alike. For example, Chat GPT may produce code and answer technical queries like arithmetic and conceptual queries. Additionally, Chat GPT can be utilized as a tool to assist writers in creative writing by providing suggestions and leads to be pursued and refined. Firstly, it may help with writing by creating ideas, structuring essay forms, proposing potential topic phrases, and providing several approaches to concept expression. Second, students can enter sentences in their native tongue and then convert them into the language of choice, which can be utilized for language learning reasons. Finally, Chat GPT may help students with research by helping them find pertinent sources, come up with ideas for research subjects, and summarize studies and articles so they are more familiar with the major ideas. The technology can potentially enhance and transform the learning experience, making it more personalized, engaging, and effective [27].

The paper "An Interview with Chat GPT: Discussing Artificial Intelligence in Teaching, research, and Practice" by Scaringi and Loche is an interview with Chat GPT, a language model developed by Open AI, about the role of AI in education. In the interview, Chat GPT shares its perspective on how AI can be used to support education, including personalized learning, automating routine tasks such as grading, and assisting with research and writing. Chat GPT explains that it has been trained on a large corpus of text, allowing it to learn patterns and relationships between words and develop coherent and contextually appropriate responses [28].

In their publication titled "The Role of Artificial Intelligence in Higher Education: Chat GPT Assessment for Anatomy Course," Talan and Kalinkara investigate the potential application of AI tools, particularly Chat GPT, in the realm of higher education. The authors discuss the benefits and limitations of using Chat GPT in this context, including the ability to generate large numbers of questions quickly and objectively, as well as the need for careful editing and review of the questions to ensure accuracy and relevance. They also note that the use of AI tools in assessment may help to reduce bias and subjectivity in grading, providing a more objective measure of student performance. Overall, the paper offers a helpful summary of the possible applications of AI technologies in higher education, stressing the advantages as well as the difficulties of integrating these technologies into instruction and evaluation procedures. The authors' focus on the use of Chat GPT in an anatomy course provides a specific example of how learning can be supported by AI and assessment in a specific academic discipline [29].

Chat GPT is a powerful language model that offers a variety of benefits and applications in different domains. One area where it can be particularly useful is in healthcare training. Chat GPT can create realistic and variable clinical vignettes that can be used to train healthcare professionals. Another area where Chat GPT can be helpful is academic and research writing. It can create texts, summaries, translations, and

literature reviews, making it a valuable tool for academic research. This can help researchers save time and effort so that they can focus on other aspects of their work. Chat GPT also has advantages in scientific research. It can efficiently analyze large data sets, help with drug discovery, identify potential drug targets and generate codes that can be used in scientific research. These capabilities can help scientists make significant advances in their work, contributing to the advancement of science. In healthcare practice, with the use of Chat GPT, tailored medicine, diagnosis, treatment, and lifestyle advice based on individual traits might all be improved. In addition, it can be used for documentation and report generation, making healthcare more efficient and effective. Finally, it should be noted that Chat GPT is a freely available package that is accessible to researchers, healthcare professionals, and students worldwide [30].

The paper by Zhai titled "Chat GPT User Experience: Implications for Education" examines how the Chat GPT language model may be used in the field of education by examining how users interact with the platform in the context of online instruction. The author surveyed 50 participants who had used Chat GPT in an educational setting, such as answering questions, generating summaries, and providing feedback. According to the study's findings, Chat GPT exhibits promising potential in enriching the online learning journey for students. The research indicates that Chat GPT can contribute to this enhancement by promptly and accurately addressing student queries, generating concise summaries of course materials, and delivering personalized feedback on their assignments. The participants rated Chat GPT as easy to use, helpful, and accurate, with a high level of overall satisfaction [31].

"We Need to Talk About Chat GPT: The Future of AI and Higher Education" by Neumann *et al*. is a timely and thought-provoking article that discusses the role of AI, specifically the Chat GPT language model, in higher education. The authors stress the necessity for a careful balance between the two and highlight significant concerns about the possible advantages and disadvantages of utilizing AI in education. The essay emphasizes how disruptive artificial intelligence (AI) chatbots, such as Chat GPT, can be in higher education, especially when it comes to scientific writing. As educators, there is a need to prepare students for the responsible use of Chat GPT and other AI tools [32].

Negative Aspects of Using Chat GPT in Education
Chat GPT's role in education is not without limitations. Our paper will also discuss these limitations.

Arif *et al*. also highlight several potential challenges and limitations of using Chat GPT in medical education. One of the issues brought up is the dependability and correctness of the data that Chat GPT gives. which is particularly important in the field of medicine where accuracy is paramount. The potential of Chat GPT to impart critical thinking and

problem-solving abilities, which are essential for medical professionals, is a further cause for worry [16].

Baidoo-Anu and Owusu Ansah describe that generative models, such as Chat GPT, may fall short when it comes to providing human-like interaction for educational purposes. They could thus be unable to offer tailored explanations or comments that cater to each student's unique requirements or clear up any misconceptions they may have. Additionally, generative models can be biased if the training data they rely on is biased, which can impact their ability to accurately evaluate student work. Several inherent constraints have been identified in Chat GPT, including the generation of inaccurate answers and the creation of fictional articles. These limitations underscore the importance of cautious usage and human oversight when deploying such models to ensure the accuracy and appropriateness of the generated content [19].

In their study, Bašić *et al*. found that the group of students who used Chat GPT did not outperform the control group in terms of content quality, writing speed, or authenticity of their essays. Interestingly, both groups took a similar amount of time to complete the task, and longer writing times were positively correlated with better essay scores. However, the experimental group did encounter more instances of plagiarism compared to the control group. Moreover, some students reported feeling uncomfortable about using Chat GPT, believing that it amounted to cheating or plagiarism [20].

They contend that to fully realize Chat GPT's potential, researchers and educators need to think about the ethical ramifications and properly incorporate Chat GPT use with other instructional strategies [21].

The research conducted by Haensch *et al*. brings attention to the insufficient discussion surrounding the limitations associated with using Chat GPT in TikTok videos. The study highlights concern such as the potential risks of generating eloquent yet incorrect responses and the presence of inherent biases in the model's outputs, which are currently not adequately addressed on the popular social media platform, particularly among younger users. Furthermore, there is a consideration that relying solely on TikTok data to assess students' perceptions of Chat GPT may not offer an accurate representation of the broader student population, as TikTok users may not be entirely representative of students at large. However, studies investigating the TikTok user base indicate no significant differences, as elucidated in the section on data collection [23].

The literature review conducted by Karthikeyan brings up several issues with the usage of Chat GPT in the classroom. One of the primary concerns is the possibility of producing incorrect and biased responses. Additionally, the use of Chat GPT may perpetuate inequalities by privileging those who have access to the technology, leading to an uneven

distribution of benefits. Moreover, ethical concerns are raised regarding data privacy and security [24].

While Chat GPT might give students instant access to pertinent information, there are certain hazards involved. These include the potential for erroneous information in training data and the risk of errors or missing information in the course of training. In addition, the use of Chat GPT can lead to a reduction in human interactions, face-to-face attention, and feedback, which could negatively impact student learning experiences. Furthermore, there are privacy concerns while using Chat GPT in medical education. In addition, the use of Chat GPT in medical education raises privacy and security concerns about sensitive patient data. Lastly, the extensive use of AI tools in education may lead to the unemployment of human instructors, necessitating the creation of programs and laws to lessen any unfavorable consequences on the labor market [17].

Mogali also noted that Chat GPT's responses were not always accurate, and the language model occasionally struggled to understand certain concepts. Students also expressed a preference for human interaction, as they felt that Chat GPT's responses lacked the personal touch and individualized attention that a human teacher could provide. More investigation is required to assess Chat GPT's efficacy in bigger sample sizes and to resolve the language model's shortcomings [26].

Qadir describes the advantages and disadvantages of generative AI technologies like Chat GPT. One danger is that students can utilize these resources improperly, which could result in plagiarism. Pupils must comprehend the significance of accurate citation and conscientious utilization of these resources. It is imperative that students utilize these resources in conjunction with their efforts, not as a substitute. The potential for false information to be spread is another issue. The data and algorithms that underpin Chat GPT and other AI technologies determine their level of reliability. As a result, it is crucial that students consult several sources and confirm the veracity of the material they find when conducting research on a subject. Finally, the usage of Chat GPT and other AI techniques in educational institutions raises privacy problems. It is essential that educational institutions establish explicit guidelines for the usage of these resources and ensure the proper protection of student data [27].

Talan and Kalinkara discussed that while Chat GPT is capable of processing and understanding textual information, it has certain limitations when it comes to interpreting visual aids like diagrams, shapes, and tables, which are easily comprehensible by human students. Furthermore, Chat GPT could give a wrong answer if a query is unclear or challenging to understand. It is advised to restate the query in a clear and explicit manner in order to address this issue [29].

Sallam describes that one of the primary ethical concerns is the risk of bias and discrimination based on the quality of training data. Another concern is the risk of hallucination, where Chat GPT generates scientifically incorrect content that sounds plausible. Transparency issues are another concern with Chat GPT. There is also a risk that the widespread use of Chat GPT could lead to a decline in the need for human expertise, which could have psychological, economic, and social consequences. Additionally, there is a risk that Chat GPT could generate over-detailed, redundant, or excessive content, which could be overwhelming or confusing for users. There is a risk that the use of Chat GPT could compromise the privacy of sensitive medical information, which could have negative consequences for individuals. Another worry is that if people become unduly dependent on the model for decision-making, using Chat GPT may cause a loss in clinical skills, critical thinking, and problem-solving ability. Additionally, there may be legal issues such as copyright and authorship status to consider. Interpretability issues are also a concern, as it can be challenging to interpret the outputs generated by Chat GPT. There is also a risk of referencing issues, where Chat GPT may generate content that is not properly cited or attributed. This could result in accusations of academic fraud in research, which could have serious consequences for individuals and institutions. Finally, there is a risk of incorrect content and the potential for an infodemic, whereby Chat GPT produces inaccurate or misleading content that has the potential to spread rapidly and harm both people and society [30].

Strategies and Guidelines for Higher Education Teachers and Institutions

Our next topic of discussion will focus on the strategies and guidelines that higher education teachers and institutions should consider when using Chat GPT.

There is growing worry that Chat GPT may now be readily utilized to generate articles that lack clinical reasoning and critical thinking, given medical literature is constantly updating research. To examine and manage access to the data produced by these AI systems, we require human intelligence and a set of rules. In a similar fashion, healthcare providers ought to set up a surveillance mechanism to make sure students refrain from using Chat GPT for medical purposes [16]. It is recommended that policymakers, researchers, educators, and technology experts collaborate and initiate discussions on how these emerging generative AI tools can be used prudently and effectively to advance education and enhance student learning [19].

According to Karthikeyan, future research explores the potential impact of Chat GPT on educational outcomes and investigates effective methods to implement the technology responsibly and equitably [24].

Kasneci et al. emphasize the importance of considering both the opportunities and challenges associated with using Chat GPT in education. They argue that technology has the

potential to transform education and increase access to learning, but only if its limitations are carefully addressed. The authors recommend that educators and policymakers take a critical approach to the use of Chat GPT in education and engage in ongoing dialogue to ensure that its use is responsible and equitable [25].

Large language models used to create education-related content such as curricula, quizzes, and academic papers can cause copyright and plagiarism issues. In order to reduce prejudice and guarantee the advantageous application of large-scale language models in education, human control of the process is also essential [25].

To responsibly mitigate the risks associated with large-scale language models in education, several important issues must be addressed. These include training or fine-tuning the model with a variety of impartial data sets, continuously assessing the model's performance to find and remove biases, implementing transparency mechanisms that let users comprehend the model's output and the data it uses, and giving educators access to expert guidance and resources to help them spot and get rid of any potential biases and limitations in the model. Furthermore, students can rely too much on the model, which could impair their ability to think critically and solve problems. Therefore, a responsible strategy to mitigate the problem would be to raise awareness of the limitations and unexpected brittleness of large language models, use them to hypothesize and explore different perspectives, and promote the use of additional materials for instruction to assess and validate the veracity of the data the model provides. Incorporating activities that encourage problem-solving and critical thinking into the curriculum, as well as having teachers validate the information the model provides and persons with the necessary experience, are also crucial. Large-scale language models should be used to supplement rather than to replace the learning process and teachers should use them to supplement their instruction rather than replace it [25].

To mitigate the risk that educators and institutions lack the understanding and expertise to effectively integrate large language models into their instructional practices, the following strategies can be employed:
- Provide ongoing professional development and training for educators to ensure that they are up to date on the latest best practices for using large language models in the classroom.
- Incorporating educational theory and pedagogical approaches to integrate new tools and technologies into classroom practice.
- Giving educators the tools and assistance they need to comprehend the benefits and drawbacks of big language models and know how to utilize them to enhance or augment certain learning processes.
- Encouraging collaboration between educators and technology experts to find innovative ways to integrate large language models into classroom practice.

- Provide incentives and prizes for teachers and educational institutions who successfully use large language models in their lesson plans and help their students learn in productive ways [25].

To address these challenges and mitigate the risks, the following actions can be taken:
- Carry out studies on the difficulties huge language models in education present, including how they can be integrated into existing educational models, and develop a new educational theory for their use.
- Evaluate instructors' and students' needs and offer case-based advice on the morally right and safe application of big language models in the classroom.
- Provide educators and institutions with chances for professional growth and needs-based training so they may exchange best practices for incorporating big language models into their teaching methods and learn about the possible applications of these models in the classroom.
- Offer free educational resources, including research, use cases, tutorials, and guidelines, so that institutions and teachers may learn how to employ language models in the classroom.
- To enable educators and organizations that are currently utilizing language models in their instruction to share their expertise and experiences with others, encourage cooperation, and create a community of these parties [25].

With the increasing use of AI technologies in education, Medical educators must investigate and employ instructional strategies that are most appropriate for technology-enhanced learning since conventional approaches may no longer be as successful in spreading knowledge or encouraging student learning. To ensure the accuracy of Chat GPT in medical education, leaders should develop clear guidelines review mechanisms and test them extensively. Newer plagiarism detection technologies can also be used to counter potential academic dishonesty. In order to facilitate the incorporation and evidence-based use of AI systems in medical education, more investigation and assessment are required. When used in conjunction with conventional teaching techniques, Chat GPT has the potential to significantly enhance student learning and provide a more dynamic and engaging learning environment [17].

Rudolph *et al*. describe that faculty can improve assessments by executing them during class, creating assessments that allow for presentations, performances, and digital forms of expression, encouraging students to write about topics that interest them, and using authentic assessments that test students' skills in realistic situations. Students can benefit from including AI tools in the curriculum, such as Grammarly and Elicit, and receive training on their proper use. They should also avoid creating an environment where faculty members are overworked and unmotivated and receive academic integrity training. Policies and guidelines should be developed for the use of AI tools in learning and teaching,

including consequences for cheating. Encouragement and support for research on the effects of AI tools on learning and teaching should also be provided [33].

The emergence of AI-generated tools like Chat GPT will transform online learning and education, and companies need to adapt by seeing it as an opportunity, not a threat. Leaders must respond quickly to technological change and embrace the generative and transformative power of AI. This means moving from a reactive to a proactive approach and leveraging AI to create new opportunities and channeling its power to exploit them [34].

As advanced AI tools such as Chat GPT become more prevalent, educational institutions must teach their students how to properly and responsibly utilize these technologies. Teaching students about the moral implications of technology use, such as avoiding plagiarism and correctly attributing sources, and teaching them how to use these tools to create their own original work is part of this. The particular educational technique will rely on the unique requirements and goals of the students as well as the institution. Faculty members are responsible for providing guidance and supporting students in using these tools responsibly and effectively. Higher education might be greatly impacted by the growing usage of AI technologies like GPT, especially in the fields of teaching and evaluation. Possible modifications include grading done by AI, personalized learning experiences, more online and distance learning opportunities, and a shift toward interactive and collaborative learning. However, the usage and implementation of these technologies will determine how AI affects higher education, hence it is crucial that academic institutions weigh the benefits and drawbacks of incorporating AI into their methods of instruction and evaluation. It's critical to understand the difference between plagiarism and appropriate use when using Chat GPT. To avoid plagiarism, one must understand proper citation guidelines, cite sources, and Use a plagiarism detection tool to review the paper again. While Chat GPT can help with brainstorming and research, It shouldn't take the place of typical homework assignments in terms of developing critical thinking and problem-solving abilities. Instead, professors can enable students to utilize Chat GPT to organize their work or generate ideas in addition to assigning standard tasks. To maximize these technologies' utility and preserve the importance of conventional homework, instructors must utilize them carefully and ethically [27].

In addition, Chat GPT may give an incorrect answer if a question is unclear, so it is important to ask questions clearly and precisely. The recent publication of Chat GPT indicates that there are few studies in the literature that compare its performance with that of college students. In the current study, a multiple-choice test was used to evaluate Chat GPT's performance in a university-level anatomy course. Future studies could investigate the performance of Chat GPT and other AI language models in different exam formats [29].

To effectively use Chat GPT for education and research, certain recommendations are proposed. First, educational institutions should promote the use of Chat GPT while ensuring that it is used in an inclusive, equitable, transparent, and ethical manner. Second, assessment standards should be revised to prevent unfair learning assessment, and formative assessment should be given priority over summative assessment. Third, educational institutions should train and guide teachers and students on how to effectively use Chat GPT while maintaining academic integrity. Fourth, action research should be conducted to further investigate the effectiveness and efficiency of integrating Chat GPT into education, and funding should be allocated to research the use of AI tools for educational purposes. Fifth, students should be vigilant in using Chat GPT and review and analyze the responses generated by the tool to ensure accuracy and compliance with academic integrity policies. Finally, researchers should use Chat GPT to better understand its benefits and weaknesses. It should be ensured that it is only used for brainstorming and sketching and not for writing entire research articles to avoid academic misconduct [35].

Susnjak notes that some educational institutions have already started to block access to Chat GPT during online exams due to concerns about academic integrity. However, she argues that this may not be a viable solution in the long term, as students will likely continue to find new ways to access the tool. To address this issue, Susnjak suggests that educators should focus on designing assessments that are less susceptible to cheating. In conclusion, Susnjak's article raises important concerns about the use of Chat GPT in online exams and highlights the need for educators to design assessments that are less susceptible to cheating, as well as to educate students about the importance of academic integrity [36].

The most sophisticated and recent language model created by Open AI, Chat GPT-3, shows great promise as an educational tool because of its ability to understand and produce human-like speech. This research question aims to investigate the potential impact of integrating Chat GPT-3 technology on student engagement, teacher workload, and instructional quality. By understanding the advantages and disadvantages of this technology in education, we can better assess its potential to improve the educational experience for students and teachers alike. Numerous reasons both in favor of and against the use of Chat GPT in education have been found in our literature review. Concerns have also been raised regarding Chat GPT's usage in the classroom.

Our research indicates that although Chat GPT has a lot of promise as an educational tool, there are certain drawbacks and difficulties with it. These benefits and drawbacks should be carefully addressed before implementing Chat GPT in the classroom, with an emphasis on responsible use. In addition, educators and policymakers need to develop appropriate strategies to integrate Chat GPT into the education system in a way that complements rather than replaces human

interaction and personalized learning. The decision to integrate Chat GPT into the education system should be made with a clear understanding of its potential impact on student's learning experiences and their overall education.

Some strategies and techniques can support the use of chat GPT in education, including:

- Before Chat GPT is used in education, it is important to clearly define the learning goals that the students should achieve.
- To ensure students receive meaningful answers from Chat GPT, it is important to provide context and structure to the questions asked.
- One useful tool for promoting critical thinking and problem-solving abilities is Chat GPT. Students may be encouraged to evaluate the answers provided by Chat GPT, identify potential biases or inaccuracies, and develop alternative perspectives.
- Chat GPT can be used in conjunction with other educational resources such as textbooks, videos, and online articles.
- Monitoring and evaluating of student progress may include analyzing the quality and accuracy of responses provided by Chat GPT, assessing student engagement and participation, and measuring learning outcomes.

Further research is needed to assess both the advantages and disadvantages of using Chat GPT in education. Some potential areas of investigation could include:

- Research could be conducted to investigate Chat GPT's effects on student learning results. This might entail contrasting the academic achievement of pupils who utilize Chat GPT with that of those who don't.
- Studies could also investigate the extent to which Chat GPT can enhance student engagement with course materials. This could involve evaluating the level of student interest and motivation when using Chat GPT.
- Research could be conducted to assess the accessibility of Chat GPT for students with different learning needs or disabilities.
- Finally, research could explore the broader pedagogical implications of using Chat GPT in education.

Regulations for Chat GPT

Guidelines for using Chat GPT in education could address a range of issues, including privacy, student safety, ethical considerations, and integrating Chat GPT into the curriculum. Some key elements that could be included in such guidelines are:

Privacy and Security: Policies should ensure that student data is protected and that appropriate security measures are in place to prevent unauthorized access to sensitive information.

Human Supervision: Policies may require Chat GPT to be used under the supervision of a human teacher to ensure students receive appropriate guidance and support.

Educational Considerations: Policies should address how it is possible to include Chat GPT into the curriculum in a way that will benefit student learning and improve the educational process.

Accessibility: Policies should ensure that Chat GPT is accessible to students with diverse learning needs or disabilities and that appropriate accommodations are made to support inclusive educational practices.

Evaluation and Monitoring: In order to determine how Chat GPT is affecting student learning outcomes and to make sure it is being utilized in an ethical and responsible manner, policies may mandate that its usage in education be routinely reviewed and observed.

Guidelines for the use of Chat GPT in education will help guarantee that this technology is utilized in a safe, responsible, and effective manner and supports student learning and achievement goals.

CONCLUSION

Overall, the research on Chat GPT-3 in education suggests that the technology has great potential for enhancing teaching and learning. While Chat GPT has many potential benefits, it is important to be aware of the risks and concerns associated with its use.

Creating policies for the moral use of Chat GPT is a crucial additional tactic. Guidelines for data privacy and confidentiality may be part of this, as well as guidelines on the use of the technology for academic purposes only. Creating rules and processes to guarantee that Chat GPT use complies with academic norms and values may be necessary to achieve this. This may entail creating avenues via which possible problems or concerns could be reported and releasing frequent updates on industry best practices and new developments in technology usage.

Overall, the use of Chat GPT in higher education presents both opportunities and challenges. By developing clear strategies and guidelines for its use, teachers and institutions can ensure that the benefits of this technology are realized while minimizing its risks and negative impacts.

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